Before the
**Federal Communications Commission**
Washington, DC 20554

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| In the Matter of | |
| | RM-10836 |
| Amendment of Parts 2 and 90 of the Commission's Rules to provide for an Emergency Vehicle Signaling Service | |

To: Media Bureau

**MOTION TO DISMISS WITHOUT PREJUDICE**

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November 1, 2004

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## MOTION TO DISMISS WITHOUT PREJUDICE

Alert Devices International Corporation ("ADiCorp") hereby moves to dismiss its petition for rulemaking in the above-captioned proceeding without prejudice, in the expectation that it will re-file an expanded version in the near future.

### DISCUSSION

On November 19, 2003, ADiCorp filed a Petition for Rulemaking ("Petition") that asked the Commission to authorize the Emergency Vehicle Signaling Service ("EVSS") in the United States.[1] EVSS will alert motorists via their AM and FM car radios of a public safety vehicle in an emergency response situation nearby.

Opponents of EVSS, chiefly representatives of the radio broadcast industry, raised technical issues, including whether EVSS can override broadcast signals at sufficient range to give useful warning of an emergency vehicle, and whether EVSS will cause excessive interference to unintended recipients. ADiCorp acknowledged the importance of these questions, particularly those from the National Association of Broadcasters, Leventhal Senter & Lerman

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[1] *Comment Sought on Adicorp's Petition for Rulemaking on Emergency Vehicle Signaling Service*, RM-10836, DA 04-37 (Mass Media Bur. released Jan. 9, 2004).

PLLC, and the Society of Broadcast Engineers, Inc. In a Motion filed on March 13, 2004, we asked the Commission to suspend the proceeding while we conducted the research necessary to answer them. On April 19, 2004, we filed a supplementary statement expressing our intent to submit the results of the research by today, November 1.

In the course of the research, ADiCorp made the decision to redesign the original unit to include the features needed to address the broadcast industry's concerns. The redesign involved the following elements:[2]

- ***Channel selection***: The redesigned EVSS unit transmits only on those channels with the strongest broadcast signals. This minimizes the likelihood of disturbing listeners tuned to distant stations that are more vulnerable to interference.

- ***EAS Avoidance***: The redesigned EVSS unit will continuously monitor broadcast frequencies for the EAS attention signal -- even during EVSS transmissions -- and silence the unit when the signal is detected.

- ***Anti-theft***: Removing the redesigned EVSS unit from an emergency vehicle permanently disables the unit by erasing a necessary ID code from nonvolatile memory. The unit cannot function again until it has been returned to the manufacturer for a new code.

- ***Anti-counterfeit***: Each redesigned EVSS unit will send its own serial number and system ID code in an in-band data burst at the beginning of each transmission. EVSS manufacturers will provide handheld receivers that display these IDs to facilitate detection of counterfeit units.

- ***Multiple EVSS transmissions***. To avoid overlap and mutual interference, each redesigned EVSS unit will monitor for transmissions by other units nearby and remain silent if it detects their signals.

The redesign retains all of the features of the earlier version intended to limit interference, including:

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[2] See the attached statement for details.

- operation only when the vehicle is in motion *and* the siren and/or flashing lights are operating;

- operation at very low power at low speeds, and at slightly higher power only at higher speeds; and

- automatic shut-down when the vehicle comes to rest for 9 seconds *or* the siren and flashing lights are turned off.

The redesign, together with the need to manufacture and verify operation of the new model, has set back the scheduling of testing promised in our March 13 filing. We are further handicapped by the need to conduct all testing in Canada, whose government has approved the EVSS device, but where suitable test facilities are limited. This combination of circumstances has made it impossible to deliver test results by the November 1 date.

ADiCorp takes the broadcast industry's concerns very seriously. The redesign that caused the delay was undertaken specifically to address those concerns. We acknowledge that the Commission and the broadcast industry need assurances that EVSS will not unduly burden radio listeners. Yet we are unable to specify a date certain by which we can make our test data available. For that reason we are reluctant to request an extension of time, whose deadline we may again be unable to meet.

## CONCLUSION

In the interests of administrative efficiency, we move the Commission to dismiss our original petition without prejudice. When testing of the new design is complete, we will re-file our petition with all supporting data.

Respectfully submitted,

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November 1, 2004

# Statement of ADiCorp

**Safety Need**

The need for EVSS technology, which most public safety personnel agree will prevent accidents and thus reduce the possibility of a personal injury or, worse yet, a fatality, remains indisputable.

The facts speak for themselves:

*** 2000** - **5949** accidents involving emergency vehicles resulting in **bodily injury** and an additional **75** accidents resulting in a **fatality**. **10,572** additional accidents resulted in **property damage** alone for a total of **16,596** accidents involving emergency vehicles.

*** 2001** - **65 fatalities** in accidents involving emergency vehicles …

*** 2002** - **77 fatalities** in accidents involving emergency vehicles …

*** According to the U.S. Department of Transportation NHTSA Traffic & Safety Facts 2000, 2001 & 2002**

**According to the National Fire Protection Association's 2003 U.S. Firefighters Fatalities Report more firefighters died in their vehicle responding to emergency calls than fighting fires.**

On July 13, 2004 a segment aired on Good Morning America with Charles Gibson, Diane Sawyer and Greg Hunter reporting. They were interviewing emergency personnel across the country, New York, Florida, New Jersey, Phoenix and Tennessee regarding "The disturbing rise in accidents involving emergency vehicles and passenger cars." According to Lt. Larry Rausch, Fire Academy Instructor, Bergen County, New Jersey **"People don't hear us coming."** (To view complete transcript of this segment go to www.transcript.net >GMA 7/13/04)

The concerns of the FCC and the radio broadcasters across America should also be addressed, which is why ADiCorp requested and received the extra time necessary to do so. This filing will address the majority of these concerns with the field test data from Canada (to follow) to positively address the remainder. We thank the opposition, as some of their issues resulted in a redesign which provides a much more effective EVSS for those on both sides of the "lights". The need for EVSS technology is clear; but can it be done with minimal disruption to the surrounding environment so that the values far outweigh the concerns? We feel we can and it does. We have found that the EVSS does not have to reach every vehicle to be effective. Reaching just a few will cause cautionary braking which in turn results in people becoming more aware, slowing, looking in their rearview mirror, etc. This is almost like a wave effect, which from the front seat of an emergency vehicle is a comforting site, they know you are there! As we have stated from the beginning, this device is not a silver bullet, but it is the best way to alert motorists to look and listen for the lights and siren of an approaching emergency vehicle. The advances in vehicle technology, i.e. soundproofing, stereos and tinted windows, over time have reduced the operators' ability to become aware of an approaching emergency vehicle.

ADiCorp realizes that EVSS will gradually evolve into much newer technology (digital, 5.9 freq., etc.) which will send this device the way of the dinosaur, but in the meantime the absolute need and lifesaving potential warrant the effort being put forth.

ADiCorp made a conscious decision to bring the application for this EVSS technology forward with the feelings that common sense will prevail, and not the concern of a corporate bottom line. We chose not to file the application with statements from widows of emergency personnel or families devastated by these accidents. To pit emergency services personnel throughout the country (police, fire and ambulance) against the broadcasting companies would not be right. The

broadcasting companies have legitimate concerns. We are addressing those and hopefully we can work together to bring this much needed technology to our emergency personnel.

**No illegal marketing in U.S.**

Many public safety agencies have asked to be first with the technology and tried to order units. ADiCorp responds that the equipment is not available for sale or use in the United States, pending FCC approval.

All three principals of ADiCorp are former or current law enforcement officers, and have repeatedly seen the need for this technology first hand from the front seat of the patrol car. They have spent the better part of their working lives enforcing laws, not publicly violating them. ADiCorp has actively promoted the concept of EVSS, both on its website and at professional meetings and trade shows attended by emergency response planners and personnel. The response has been overwhelmingly positive.

ADiCorp solicits public safety agencies' support for help in the approval process. ADiCorp believes its promotional efforts may have led to the mistaken conclusion that it is presently selling EVSS units in the United States. **ADiCorp has not sold and is not selling any EVSS units in the United States, and has placed an appropriate disclaimer on its website to make that clear.** Nor has ADiCorp sold any EVSS units to the many U.S. federal agencies that have requested them. Representatives of ADiCorp have met with representatives of NAB to assure them that ADiCorp has not and will not make any EVSS sales in the United States until after FCC approvals have been obtained.

**Intelligent Application of Transmit Power**

In order to effectively reach the intended automotive listener, the EVSS transmitter applies its RF transmit power intelligently, transmitting only on the strongest several radio channels. The EVSS transmitter determines these channels using a radio receiver integrated circuit, similar to those used in automotive receivers. This receiver is of course collocated with the EVSS transmitter, ensuring that it is hearing incident broadcast signals at nearly the same strength as nearby vehicles.

Before transmitting, and continuously while in standby mode (that is, not enabled to transmit), the EVSS transmitter scans the entire broadcast band and determines the strongest N channels. The number of transmit channels, N, is selectable in firmware. The EVSS transmitter thus always has a current survey of channel activity. This list of N strong channels is used to synthesize a set of carriers on those channels for transmission.

In this way, the EVSS transmitter avoids transmitting on unused channels, or channels occupied by distant stations that nearby listeners are unlikely to be tuned to.

The EVSS transmitter continually updates its list of the strongest channels by scanning in the time between its own transmissions, which are only a few seconds long. Therefore, a vehicle on an extended excursion with the EVSS transmitter enabled will adapt in near real time to the landscape of broadcast signals, delivering the message to the most likely field of listeners, and avoiding distant interference.

The EVSS transmitter may also be programmed to transmit on channels that comprise any combination of strong and less strong stations. This may be done to optimize transmission distance, since transmitting against a strong station will necessarily reduce the effective distance of the transmission. A trade off is inevitable, because there are generally more listeners to strong nearby stations, but these reduce the effective range of the EVSS transmitter. Transmitting on channels that have less incident signal strength will provide more range, but perhaps fewer

listeners. Ongoing testing will help to determine the combination that reaches the greatest number of vehicles with the least interference to unintended recipients.

**EAS Avoidance**

It is very important that the EVSS transmitters do not interfere with the EAS relay system. To this end, each EVSS transmitter is equipped with detectors for the EAS two-tone attention signal, mandated by the FCC to be transmitted for a duration of at least eight seconds at the beginning of each EAS broadcast. These tones can be detected reliably with current technology, as is done with EAS decoders at broadcast stations. Transmissions from the EVSS transmitter must of course be less than eight seconds in duration, and must allow for the time required to scan the active broadcast channels.

For example, if the EVSS transmitter is configured to transmit on ten channels (the expected typical complement), it must scan those ten channels at least every eight seconds to detect the EAS two-tone attention signal. Such a ten channel scan and tone detection can be performed using modern DSP techniques in only a second or two, with an algorithm to compensate for distant reception to enhance tone detection in the presence of noise and fading.

Assuming a two second EAS attention signal scan time for ten channels, six seconds are left for the EVSS transmitter alert message. This is more than enough time to convey urgent information to vehicular listeners. In fact, an optimal message length is much shorter, on the order of two or three seconds.

As an illustration, the EVSS transmitter would listen for the EAS attention signal for two seconds on its currently active channels, then transmit its message for up to six seconds, then repeat the process. An eight second EAS attention signal would be detected under all conditions.

In the case that the EVSS transmitter hears the EAS two-tone attention being broadcast, it will cease transmission immediately to avoid interference with the EAS data burst and voice traffic.

Thus it is seen that the EVSS transmitter can avoid interference with the EAS relay network.

**Anti-Theft and Anti-Pirating Features**

The EVSS transmitter needs features to prevent use of a stolen unit to disrupt broadcast services, and to identify by serial number and purchaser of any unit that is broadcasting.

Physical security is implemented as follows. The EVSS transmitter is typically mounted to the trunk or other metal wall in the vehicle using self tapping sheet metal screws. A security post is factory installed in the unit, and is provided as part of the installation kit. The EVSS transmitter has a hole in the middle of its mating mounting surface that accepts this post. The post closes a switch within the body of the EVSS transmitter, telling the circuitry inside that the unit is mounted, and subsequently permitting transmission after the unit is electrically enabled as described below.

The post, attached to the car body, prevents a thief from sliding a card under the unit or doing anything else to the occluded switch to prevent it from opening. Lifting the EVSS transmitter just a fraction of an inch off the mounting surface will open the switch and disable the unit.

The cover of the EVSS transmitter is not removable while the unit is mounted. This is accomplished by placing the cover screws on the mounting surface of the EVSS transmitter, so that they are inaccessible with the unit mounted. Thus it is not possible to defeat the interlock switch without destroying the EVSS transmitter.

A security tag contains a system ID code, and that code is written into a nonvolatile memory in the EVSS transmitter that retains data even if the power is turned off. System ID codes are

assigned to each customer. Thus, each EVSS transmitter is assigned to an identifiable purchasing entity or customer.

If the EVSS transmitter senses that its security interlock has been broken, the EVSS transmitter completely erases the system ID code so that it cannot transmit until being reprogrammed.

The security post monitoring circuitry is battery powered continuously within the EVSS transmitter and functions even if all external power and cables are disconnected from the EVSS transmitter. If the internal battery is exhausted (typically after ten years), the unit ceases to function and will not transmit.

If an EVSS transmitter is removed from a vehicle in the normal course of service, it is instantly and automatically disabled with no further action required on the part of the user. The unit is therefore inert and unusable until returned to the factory and reprogrammed.

Internally, it would not be possible for a technician or hacker to simply short one or two wires in the EVSS transmitter to enable transmission and defeat the security measures. Firmware is secured within the unit to resist reverse engineering.

These security measures raise the labor cost of a hacker who would attempt to enable an EVSS transmitter for malicious transmission to prohibitive levels. Considering the time required, it would be far easier for a hacker simply to buy a legal FM microphone from Radio Shack and obtain a power amplifier by mail order, or build one from a schematic available on the Internet.

Each EVSS transmitter sends its serial number and system ID code in an in-band data burst at the beginning of each transmission. This short data burst (typically 50-100 milliseconds in length) may be decoded by a small, battery operated handheld receiver that displays the identity of the transmitting unit. The manufacturer of the EVSS transmitter would be responsible for making available a few such ID receivers for enforcement situations.

The EVSS transmitter transmits this ID information only in FM band broadcasts, to allow a higher data rate and correspondingly shorter and less intrusive sound to the listener. The loudness of the data burst would be reduced from full modulation.

The EVSS transmitter manufacturer will have a database of the serial numbers and system ID codes of all units sold to allow identification of a particular unit if a complaint arises.

**Multiple EVSS Transmissions**

It often happens that several emergency vehicles are en route to an emergency scene in close proximity to one another on the highway. Multiple transmissions in such cases would interfere with one another and lessen the effectiveness of the EVSS transmitter.

To avoid this situation, each EVSS transmitter listens for the security ID transmissions of others and ceases transmitting when it detects one in order not to overlap transmissions. In short order only one unit of a group of proximate emergency vehicles would remain transmitting. When a disabled unit becomes unable to hear the transmissions of other units for a period of time, it would resume its own transmissions.

Scanning for other EVSS transmitter transmissions is a simple extension of the scan for EAS alert tones.

**Transmitter Power a Function of Vehicle Speed**

The EVSS unit can adjust its transmit power to accommodate the traffic situation nearby. Since lower speeds require less braking distance on the part of non-emergency vehicles (to avoid a collision), less power is required to be transmitted. This tends to reducethe interference that stationary receivers would incur when an emergency vehicle moves slowly through a residential area. Higher speeds used on open highways warrant the use of higher transmitter power to increase the effective range of transmission. But the wide right-of-way limits the numbers of residential listeners in range, and the high speed makes any interference that does occur very brief.

The EVSS transmitter is programmable regarding the function of power vs. speed. These factors may be easily and permanently programmed into the units when the FCC makes its final determination of these relationships. A piecewise linear function of several segments can be accommodated. The unit is also programmed to turn off automatically shortly after an emergency vehicle becomes stationary.

**Dedicated frequencies**

The position taken by some EVSS opponents, that there are alternative means to accomplish the same task, is not realistic. The Safety Warning System (SWS) uses either radar detectors which are currently illegal in two jurisdictions and used by no more than 6% of the licensed drivers in the others, or stand-alone receivers, which are extremely rare. These numbers are far too small to make any significant impact on the problem of responding emergency vehicle safety.

The Dedicated Short Range Communications (DSRC) system is a great idea and will hopefully provide tremendous help in making our roadways safer in the future. The exorbitant expense of $25,000-$100,000 per information service kiosk[2] at this time does not yet make the service cost effective, and it will take 5-10 years before manufacturers begin installing the system in even the most expensive vehicles[2]. Looking even optimistically at the DSRC technology it will be years away and ADI Corp. looks forward to developing ways to evolve its product into the DSRC service.

**Thomas J. Macone**
**President**

[1]Simmons Market Research, NY
[2]The Economist, technology quarterly 9/6/03

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